PATENT ABSTRACTS OF JAPAN

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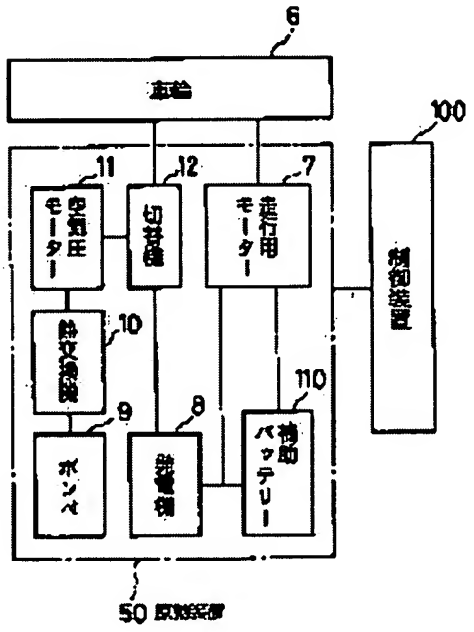
(54) FIRE EXTINGUISHING ROBOT

(57)Abstract:

PROBLEM TO BE SOLVED: To increase the traveling capacity and the adaptability as an extinguishing robot while self-providing the power source, by providing the robot with a cylinder supplying gas to a pneumatic motor as the power source and driving an electric generator by the pneumatic motor and driving an electric motor by the electricity.



SOLUTION: Gas is contained in a cylinder 9 of a power source device 50 and high pressure gas supplied from the cylinder 9 is heat-exchanged by a heat-exchanger 10 and a pneumatic motor 11 is driven by the expansion energy of the high pressure gas heat-exchanged by the heat-exchanger and supplied therefrom. And an electric generator 8 is driven by the power supplied by the pneumatic motor 11. And further, a traveling motor 7 is driven by the electricity supplied by the electric generator 8 to supply the power to the wheels 6. The transmission of the power of the pneumatic motor 11 is changed over by a changeover switch 12 and the electricity from the electric generator is supplied to charge an auxiliary battery 110.

LEGAL STATUS

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention runs the orbit top prepared in the area for fire prevention, and the fire is extinguished in case of a fire, or it relates to the source of power for operating this especially robot about the robot for fires which approaches a fire point and performs a fire monitor etc.
[0002]
[Description of the Prior Art] This kind of robot for fires carries a prime mover, a control unit, etc. as these sources of power in a fire extinguisher, fire extinguisher release installation, fire supervisory equipment, a traveller, and a list, is arranged on the orbit prepared in the area for fire prevention, and is used.
[0003] As for the conventional robot for fires, the electrical motor is used as the source of power. Therefore, as for the robot, it was indispensable to have equipped the motor with a means, i.e., an electric supply means, to supply electrical energy. There was a means like a less or equal as this electric supply means.
[0004] (1) Lay a feeder in accordance with the transit orbit of the robot for fires, and supply electric power to a motor from this feeder.
(2) Carry a battery in the robot body for fires, and supply electric power to a motor from this battery.
[0005]
[Problem(s) to be Solved by the Invention] However, in the above-mentioned electric supply means of (1), since the overall length of a robot's transit orbit will be covered and a feeder will be laid, the trouble that facility cost is very high, and its cost which it takes is very [the maintenance of the feeder covering a long distance / very] very high in after a facility exists. Furthermore, if it is going to enlarge capacity of a motor, it ****s in it, and it is necessary to also make a feeder thick and it will become what has still higher facility cost.
[0006] In the above-mentioned electric supply means of (2), since there is no need for construction of a feeder and the self-conclusion is carried out about the source of power, considering the low price of facility cost, and the ease of a maintenance, it can be said that the above-mentioned electric supply means of (2) is more desirable than the above-mentioned electric supply means of (1).
[0007] However, a trouble exists also in this electric supply means of (2). That is, since a battery with a unit weight or the property in which the accumulation factor of the energy per unit volume is low will be carried in the robot for fires in the case of the electric supply means of the above (2), the weight of a battery and the magnitude of the volume pose a problem.
[0008] For this reason, the following troubles consist in this electric supply means, i.e., the robot for fires carrying a battery.
[0009] ** Since the weight and the volume of a battery are large, a robot's miniaturization and lightweight-izing are difficult.
** the capacity of a battery, and capacity of a motor -- not restricting -- it does not obtain and sufficient transit capacity, i.e., sufficient mileage, a travel speed, torque, etc. are not acquired as a source of power

for transit.
** It is not suitable for ramp transit from the situation of the above-mentioned **.
[0010] It is desirable that the robot for fires is installed in narrow installation space, and it is small (when installing the robot for fires in a tunnel especially, the construction gage for securing the tooth space of a transit car in a tunnel is specified, and since it cannot but install in the narrow space restricted very much, a more small thing is desirable [the robot for fires].).
[0011] Moreover, since it is required that the robot for fires should move within an instant to a fire point at the time of the outbreak of a fire, and fire fighting should be performed, the higher one of the transit capacity in the robot for fires is desirable.
[0012] Furthermore, since the robot for fires is in demand also in the location (for example, a ramp will consist also in a robot's transit orbit when forming the robot for fires in such a tunnel although the tunnel etc. may contain the ramp all over the transit way.) where a ramp consists in a robot's transit orbit, it is desirable that it is suitable also for ramp transit.
[0013] Since there is a trouble like above-mentioned ** thru/or **, the robot for fires which carried the above-mentioned electric supply means of (2), i.e., a battery, cannot say that what especially the above-mentioned robot for fires is expected is fully satisfied.
[0014] Although the purpose of this invention carries out a self-conclusion about the source of power in the robot for fires in view of the above-mentioned situation, it is attaining a miniaturization and lightweight-izing of the robot for fires, and enabling it to raise the fitness as a robot for fires.
[0015] Moreover, in the robot for fires, although other purposes carry out a self-conclusion about the source of power, they are raising transit capacity as compared with the conventional example, and enabling it to raise the fitness as a robot for fires.
[0016]
[Means for Solving the Problem] In the robot for fires by which it will be prepared in the space for fire prevention if this invention that attains the above-mentioned purpose describes, this robot for fires is the robot for fires characterized by to be a thing equipped with the bomb which supplies gas to the air motor and this air motor as a source of power of this robot for fires, the generator which generates electricity with the power exercised by this air motor, and the electrical motor driven with the electrical and electric equipment generated with this generator.
[0017] In the robot for fires formed in the space for fire prevention moreover, this robot for fires The bomb which supplies gas to the air motor and this air motor as a source of power of this robot for fires, He is the robot for fires characterized by having the generator which generates electricity with the power exercised by this air motor, the auxiliary dc-battery charged by the electrical and electric equipment generated with this generator, and the electrical motor driven with the electrical and electric equipment which this auxiliary dc-battery stores electricity.
[0018] Moreover, the robot for fires is said robot for fires having the heat exchange machine which intervenes between an air motor and a bomb.
[0019] Moreover, the robot for fires is said robot for fires characterized by being what changes and runs it runs [whether it runs with the power which is equipped with the change machine which changes transfer of the power of an air motor, and is exercised by the air motor with this change machine, or] with an air motor, a generator, and the power exercised through an electrical motor one by one.
[0020] Moreover, the robot for fires is said robot for fires characterized by being what runs the orbit prepared in the space for fire prevention.
[0021]
[Embodiment of the Invention] The example of this invention is explained based on an

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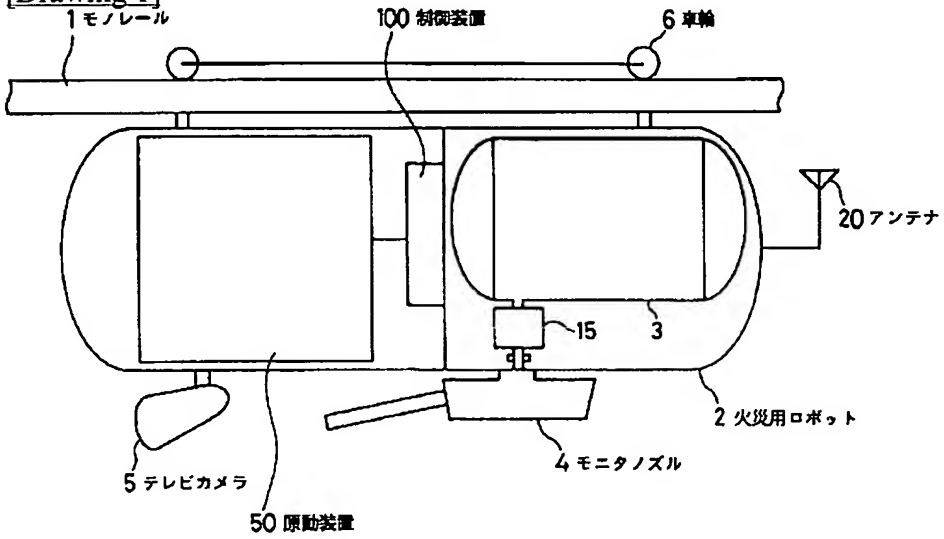
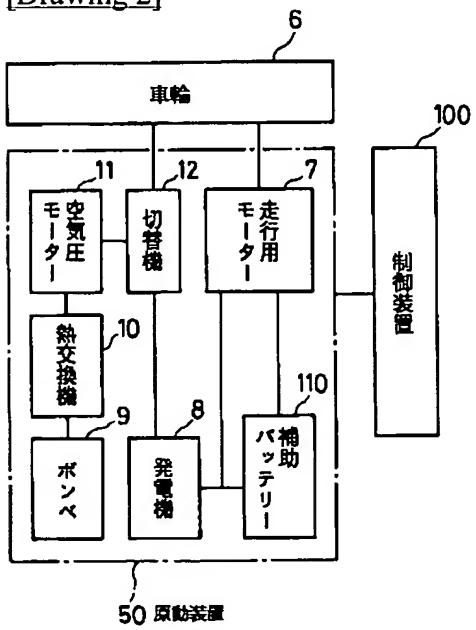
DRAWINGS

[Drawing 1]



[Drawing 2]



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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the sectional view of the robot for fires which shows the example of this invention.
[Drawing 2] It is the block diagram showing the equipment configuration of original ****** of drawing 1 .
[Description of Notations]
1 Monorail
2 Robot for Fires
3 Fire Extinguisher Bomb
4 Monitor Nozzle
5 Television Camera
6 Wheel
7 Drive Motor
8 Generator
9 Bomb
10 Heat Exchange Machine
11 Air Motor
12 Change Machine
50 Original ******
100 Control Unit
110 Auxiliary Dc-battery

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CLAIMS

[Claim(s)]
[Claim 1] He is the robot for fires characterized by being a thing equipped with the bomb with which this robot for fires supplies gas to the air motor and this air motor as a source of power of this robot for fires in the robot for fires formed in the space for fire prevention, the generator which generates electricity with the power exercised by this air motor, and the electrical motor driven with the electrical and electric equipment generated with this generator.
[Claim 2] He is the robot for fires characterized by to have the electrical motor which drives with the electrical and electric equipment stored electricity by the auxiliary dc-battery charged by the bomb with which this robot for fires supplies gas to the air motor and this air motor as a source of power of this robot for fires in the robot for fires formed in the space for fire prevention, the generator which generates electricity with the power exercised by this air motor, and the electrical and electric equipment generated with this generator, and this auxiliary dc-battery.
[Claim 3] The robot for fires is a robot for fires 1 characterized by being a thing equipped with the heat exchange machine which intervenes between an air motor and a bomb, or given in two.
[Claim 4] The robot for fires is a robot for fires according to claim 1, 2, or 3 characterized by being what changes and runs it runs [whether it runs with the power which is equipped with the change machine which changes transfer of the power of an air motor, and is exercised by the air motor with this change machine, or] with an air motor, a generator, and the power exercised through an electrical motor one by one.
[Claim 5] The robot for fires is a robot for fires according to claim 1, 2, 3, or 4 characterized by being what runs the orbit prepared in the space for fire prevention.

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